Mitsubishi General-Purpose Programmable Controller

Renewal Tool

Conversion Adaptor

Models:

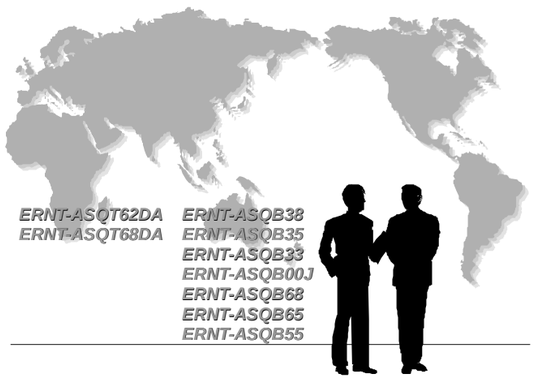
ERNT-ASQT62DA ERNT-ASQT68DA

Base Adaptor

Models:

ERNT-ASQB38 ERNT-ASQB35 ERNT-ASQB33
ERNT-ASQB00J ERNT-ASQB68 ERNT-ASQB65
ERNT-ASQB55

User's Manual



50CM-D180090-A (1104) MEE

● SAFETY INSTRUCTIONS ●

(Always read these precautions prior to use.)

Before attempting to use the Conversion Adaptor and the Base Adaptor (or the Products), read all instructions contained in this manual carefully to ensure safe and correct operation.

The safety instructions appearing in this manual are limited to those that apply to the Products. For safety instructions to be heeded in regard to your programmable controller system as a whole, refer to the user's manual supplied with the MELSEC-Q Series CPU module you use.

In this manual, the safety precautions are ranked as "Warning" and "Caution".

⚠ WARNING	Indicates an immediately hazardous situation which, if not properly dealt with, will result in death or serious injury.
⚠ CAUTION	Indicates a hazardous situation which, if not properly deal with, will result in moderate or mild injury, or property damage alone.

Even a safety instruction marked with "⚠ Caution" could have serious consequences under certain conditions. All the safety instructions, regardless of their classification of criticality, carry important points to be noted. Observe them without fail.

Save this manual for reference when needed while at the same time ensuring that it is always passed on to the ultimate user.

[Precautions: Prior to use]

⚠ CAUTION

- When making a switch from the MELSEC-AnS Series to the MELSEC-Q Series, be sure to consult user's manual supplied with individual module under the MELSEC-Q Series to confirm differences in various aspects including performance and function between the two series.

[Installation Precautions]

⚠ CAUTION

- Use the Conversion Adaptor and the Base Adaptor in the environmental conditions that are specified in the general specification contained in the user's manual supplied with the MELSEC-Q Series CPU Module. If the Products are used in any environment beyond the bounds of the general specification, electric shock, fire, malfunction, or damage to or degradation of the Products will result.
- Do not touch live uninsulated part directly. Contact will cause malfunction or failure in the system.
- Fasten the Conversion Adaptor and the Fittings and the Base Adaptor securely with retaining screws, and tighten the screws by applying torque within specified limits. Loose screws can lead to the dropping of the converter adaptor, fittings, or base adaptor, possibly causing breakage thereof. Excessive tightness of the screws can lead to breakage of the screws, converter adaptor, fittings, base adaptor, or MELSEC-Q Series Module, possibly causing the dropping, shorting, and malfunction thereof.
- Always check for correct match between MELSEC-Q Series and the Conversion Adaptor. Incorrect match can cause damage to the MELSEC-Q Series module.

[Installation Precautions]

⚠ CAUTION

- When installing the converter adaptor, take care not to get your hand snagged on the fittings or the like. Injury may result.
- When installing or removing the MELSEC-Q Series Module complete with a converter adaptor, be sure to hold it with both hands. Dropping may lead to breakage.

[Wiring Precautions]

⚠ WARNING

- Before attempting to install the Unit or carry out the necessary wiring, make certain that the external power supply, used in the system, is shut off on all three phases. Failure to do so may result in electric shock or damage to the product.
- When energizing the Products or putting them into operation after the completion of installation or wiring work, always have a cover placed over the terminal block for the MELSEC-AnS Series components. Without the cover placed in position, electric shock can result.

⚠ CAUTION

- Ground the FG terminals to the protective ground conductor dedicated to the programmable controller. Failure to do so may result in electric shock or malfunction.
- Carry out wiring for the Conversion Adaptor correctly after checking the specification and terminal arrangement for the module used. Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- Tighten the MELSEC-AnS Series terminal attaching screws and terminal screw secirely by applying torque within the specified limits. Loose screws will cause short circuit, fire or malfunction. Excessive tightening will damage the screws or the Conversion Adaptor which in turn will cause dropping of parts, short circuit or malfunction.
- Use care to prevent foreign materials including cuttings and wiring debris from entering the Conversion Adaptor or the MELSEC-Q Series module. These will be cause for fire, failure or malfunction.

[Startup and Maintenance Precautions]

⚠ WARNING

- Do not touch live terminals. There is a danger of electric shock or malfunction.
- Shut off the external power supply for the system in all phases before cleaning or retightening the terminal screws. Failure to do so may result in electric shock or cause the MELSEC-Q Series module to fail or malfunction. Loose screws can lead to dropping, shorting, and malfunction. Excessive tightness of the screws can lead to breakage of the screws, converter adaptor, fittings, base adaptor, or MELSEC-Q Series Module, possibly causing the dropping, shorting, and malfunction thereof.

⚠ CAUTION

- Do not modify the Conversion Adaptor or take it apart. Doing so will cause failure, malfunction, personal injury, or fire.
- The Conversion Adaptor comes in a resin case. Do not drop the Adaptor or give a strong impact to it. This will cause damage to the Adaptor.

[Disposal Precautions]

⚠ CAUTION

- When you dispose of the Products, handle them as industrial waste.

EMC AND LOW VOLTAGE DIRECTIVES

Compliance to the EMC Directive, which is one of the EU Directives, has been a legal obligation for the products sold in European countries since 1996 as well as the Low Voltage Directive since 1997. Manufacturers who recognize their products are compliant to the EMC and Low Voltage Directives are required to declare that print a "CE mark" on their products.

Authorized representative in Europe

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1. General Description

This manual provides information about the Conversion Adaptor (ERNT-ASQT62DA/-ASQT68DA) and the Base Adaptor (ERNT-ASQB38/-ASQB35/-ASQB33/-ASQB00J/-ASQB68/-ASQB65/-ASQB55) available as Renewal Tools for the Mitsubishi General-Purpose Programmable Controller.

The Conversion Adaptor is a product for effecting conversion to transcend difference in pin assignment between the MELSEC-AnS Series and the MELSEC-Q Series. The Base Adaptor is a product which enables a MELSEC-Q Series base module to be installed by utilizing the mounting holes in the MELSEC-AnS Series base module. (No additional drilling is needed.)

Before attempting to make a switch from MELSEC-AnS Series to MELSEC-Q Series in your installation, consult the user's manual supplied with individual module under the latter series to learn about how they differ in various aspects including performance and function.

Upon unpacking your Adaptors, check to see that the following items are included in their shipping carton.

(1) Conversion Adaptor

Item name	Quantity
Adaptor	1
Fittings	1
Fittings attaching screws (M3.5 x 6)	2
Terminal block cover	1

(2) Base Adaptor

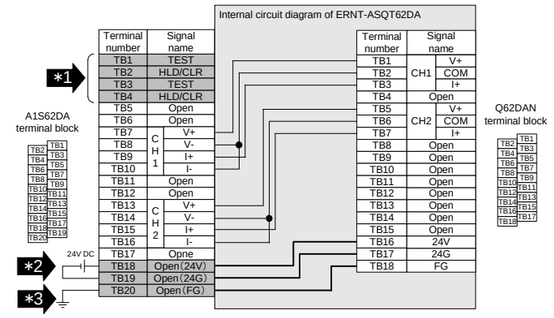
Item name	Quantity
Base adaptor	1
Q base module attaching screws (M4 X 10)	4
Base Adaptor attaching screws (M5 X 12)	4

2. Product Specification

2.1 Conversion Adaptor

For detail specification and general specification which do not appear in the specification comparison charts contained herein, see the user's manual supplied with the MELSEC-Q Series module you use. Those parts of the specification that differ between the MELSEC-AnS Series and the MELSEC-Q Series are where a switch from the first series to the second is subjected to specification-related restrictions. Check the specification of the devices to be connected for more details.

Conversion Adaptor model name	MELSEC-AnS Series	Number of analog input points	MELSEC-Q Series	Mass of Conversion Adaptor (g)
ERNT-ASQT62DA	A1S62DA	2	Q62DAN	75



POINT

⁎1 Q62DAN is not provided with a terminal for Offset/Gain setting or Output Hold/Clear setting purposes.
Make Output Hold/Clear setting by choosing an appropriate Q62DAN intelligent function module switch setting.
For more details about the Offset/Gain setting and Output Hold/Clear setting, see the Q62DAN User's Manual.

⁎2 Q62DAN requires power supply. Therefore, use the opened terminals (TB18, TB19) of A1S62DA to provide 24VDC power supply to Q62DAN.

⁎3 Be sure to establish a ground for the FG terminal (TB18) of Q62DAN using the open terminal (TB20) of A1S62DA.

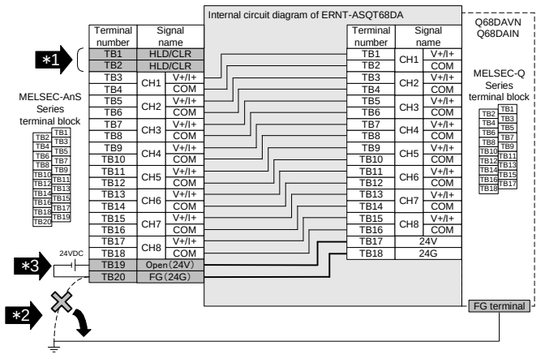
<Specification Comparison Chart>

Item		A1S62DA	Q62DAN
Digital input		Signed 16-bit binary Voltage Output / Current Output 1/4000: –4000 to 4000 / 0 to 4000 1/8000: –8000 to 8000 / 0 to 8000 1/12000: -12000 to 12000 / 0 to 12000	Signed 16-bit binary normal resolution mode : -4096 to 4095 high resolution mode : -12288 to 12287, -16384 to 16383
Analog output	Voltage	-10 to 0 to 10V DC (External load resistance : 2kΩ to 1MΩ)	-10 to 10V DC (External load resistance : 1kΩ to 1MΩ)
	Current	0 to 20mA DC (External load resistance : 0Ω to 600Ω)	0 to 20mA DC (External load resistance : 0Ω to 600Ω)
I/O characteristics		Resolution: 1/4000 / 1/8000 / 1/12000 / Analog output value Voltage – Digital input value: 4000 / 8000 / 12000 / 10V; 2000 / 4000 / 6000 / 5V; 0 / 0 / 0 / 0V; -2000 / -4000 / -6000 / -5V; -4000 / -8000 / -12000 / -10V Current – Digital input value: 4000 / 8000 / 12000 / 20mA; 2000 / 4000 / 6000 / 12mA; 0 / 0 / 0 / 4mA	Analog output range / Normal resolution mode (Digital input value / Maximum resolution) / High resolution mode (Digital input value / Maximum resolution) Voltage – 0 to 5V: 0 to 4000 / 1.25mV; 0 to 12000 / 0.416mV Voltage – 1 to 5V: 0 / 1.0mV; 0 / 0.333mV Voltage – -10 to 10V: -4000 to 4000 / 2.5mV; -16000 to 16000 / 0.625mV Voltage – User range setting: -4000 to 4000 / 0.75mV; -12000 to 12000 / 0.333mV Current – 0 to 20mA: 0 to 4000 / 5μA; 0 to 12000 / 1.66μA Current – 4 to 20mA: 4μA; 1.33μA Current – User range setting: -4000 to 4000 / 1.5μA; -12000 to 12000 / 0.83μA
Maximum resolution		Voltage Output / Current Output 1/4000: 2.5mV(10V) / 5μA(20mA) 1/8000: 1.25mV(10V) / 2.5μA(20mA) 1/12000: 0.83mV(10V) / 1.7μA(20mA)	
Overall accuracy		Voltage : ±1.0%(±100mV) Current : ±1.0%(±200μA)	Ambient temperature 25±5℃ : Within ±0.1% (Voltage : ±10mV, Current : ±20μA) Ambient temperature 0 to 55℃ : Within ±0.3% (Voltage : ±30mV, Current : ±60μA)
Maximum conversion time		Maximum 25 ms/2 channels (same for 1 channel)	80 μs/channel
Absolute maximum output	Voltage	±12 V	±12 V
	Current	28 mA	21 mA
Analog output points		2 channels/module	2 channels/module
Insulation method	Between the output terminal and programmable controller power	Photocoupler insulation	Photocoupler insulation
	Between channels	Non-insulation	Non-insulation
	Between external supply power and analog output	-	Transformer insulation
No. of occupied points		32 points	16 points
Connected terminal block		20-points terminal block	18-points terminal block
Current consumption		0.80 A	0.33 A
External supply power	Voltage	-	24V DC +20% -15%
	Current	-	0.15A

POINT

1. A1S62DA and Q62DAN differ from each other in the way input/output signals (X, Y) and buffer memory addresses are allocated. Therefore, you need make necessary changes to the sequence program that is used.

Conversion Adaptor model name	MELSEC-AnS Series	Number of analog input points	MELSEC-Q Series	Mass of Conversion Adaptor (g)
ERNT-ASQT68DA	A1S68DAV	8	Q68DAVN	75
	A1S68DAI	8	Q68DAIN	



POINT

⁎1 Q68DAVN and Q68DAIN are not provided with a terminal for Output Hold/Clear setting purposes.
Make Output Hold/Clear setting by choosing an appropriate Q68DAVN/Q68DAIN intelligent function module switch setting.
For details about Output Hold/Clear setting, see the Q68DAVN/Q68DAIN User's Manuals.

⁎2 Disconnect the FG wire from the FG terminal (TB20) of A1S68DAV/A1S68DAI and reconnect it to the FG terminal at the bottom of Q68DAVN/Q68DAIN.

⁎3 Q68DAVN/Q68DAIN requires power supply. Therefore, use the opened terminal (TB19) and the FG terminal (TB20) of A1S68DAV/A1S68DAI to provide 24VDC power supply to Q68DAVN/Q68DAIN.

<Specification Comparison Chart>

Item		A1S68DAV	Q68DAVN
Digital input		Signed 16-bit binary -2048～2047	Signed 16-bit binary {normal resolution mode : -4096 to 4095 high resolution mode : -12288 to 12287, -16384 to 16383}
Analog output		-10 to 0 to 10V DC (External load resistance : 2kΩ to 1MΩ)	-10 to 10V DC (External load resistance : 1kΩ to 1MΩ)
I/O characteristics		Digital input value / Analog output value 2000 / 10V 1000 / 5V 0 / 0V -1000 / -5V -2000 / -10V	Analog output range / Normal resolution mode: Digital input value / Maximum resolution / High resolution mode: Digital input value / Maximum resolution 0 to 5V / 0 to 4000 / 1.25mV / 0 to 12000 / 0.416mV 1 to 5V / 1.0mV -10 to 10V / 2.5mV / -16000 to 16000 / 0.625mV User range setting / -4000 to 4000 / 0.75mV / -12000 to 12000 / 0.333mV
Maximum resolution		5mV	
Overall accuracy		±1.0%(±100mV)	Ambient temperature 25±5℃ : Within ±0.1% (±10mV) Ambient temperature 0 to 55℃ : Within ±0.3%(±30mV)
Maximum conversion time		Maximum 4 ms/8 channels	80 μs/channel
Absolute maximun output		-	±12V
Analog output points		8 channels/module	8 channels/module
Insulation method	Between the output terminal and programmable controller power supply	Photocoupler insulation	Photocoupler insulation
	Between channels	Non-insulation	Non-insulation
	Between external supply power and analog output	-	Transformer insulation
No. of occupied points		32 points	16 points
Connected terminal block		20-points terminal block	18-points terminal block
Current consumption		0.65 A	0.38 A
External supply power	Voltage	-	24V DC +20%, -15%
	Current	-	0.2 A

POINT

1. A1S68DAV and Q68DAVN differ from each other in the way input/output signals (X, Y) and buffer memory addresses are allocated. Therefore, you need make necessary changes to the sequence program that is used.

Item		A1S68DAI	Q68DAIN
Digital input		Signed 16-bit binary 0～4096	Signed 16-bit binary {normal resolution mode :-4096 to 4095 high resolution mode : -12288 to 12287, -16384 to 16383}
Analog output		4 to 20mA DC (External load resistance 0 to 600Ω)	0 to 20mA DC (External load resistance 0 to 600Ω)
I/O characteristics		Digital input value / Analog output value 4000 / 20mA 2000 / 12mA 0 / 4mA	Analog output range / Normal resolution mode: Digital input value / Maximum resolution / High resolution mode: Digital input value / Maximum resolution 0 to 20mA / 0 to 4000 / 5μA / 0 to 12000 / 1.66μA 4 to 20mA / 4μA / 1.33μA User range setting / -4000 to 4000 / 1.5μA / -12000 to 12000 / 0.83μA
Maximum resolution		4μA	
Overall accuracy		±1.0%(±200μA)	Ambient temperature 25±5℃ : Within ±0.1%(±20μA) Ambient temperature 0 to 55℃ : Within ±0.3%(±60μA)
Maximum conversion time		Maximum 4 ms/8 channels	80 μs/channel
Absolute maximun output		-	21mA
Analog output points		8 channels/module	8 channels/module
Insulation method	Between the output terminal and programmable controller power	Photocoupler insulation	Photocoupler insulation
	Between channels	Non-insulation	Non-insulation
	Between external supply power and analog output	-	Transformer insulation
No. of occupied points		32 points	16 points
Connected terminal block		20-points terminal block	18-points terminal block
Current consumption		0.85 A	0.38 A
External supply power	Voltage	-	24V DC +20%, -15%
	Current	-	0.27A

POINT

1. A1S68DAI and Q68DAIN differ from each other in the way input/output signals (X, Y) and buffer memory addresses are allocated. Therefore, you need make necessary changes to the sequence program that is used.

2.2 Base Adaptor

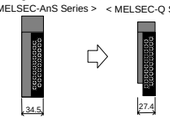
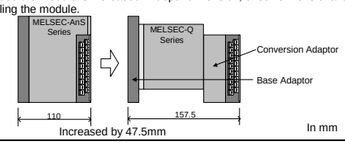
Base Adaptor model name	Specification			
	Compatible modules		Outer dimensions (mm)	Mass (g)
	MELSEC-AnS	MELSEC-Q		
ERNT-ASQB38	A1S38B	Q38B	127(H)×430(W)×14(D)	868
ERNT-ASQB35	A1S35B	Q35B	127(H)×325(W)×14(D)	660
ERNT-ASQB33	A1S33B	Q33B	127(H)×255(W)×14(D)	529
ERNT-ASQB00J	A1SJCPU A1SJCPU-S3 A1SJHCPU	Q00JCPU Q00UJCPU	127(H)×330(W)×14(D)	670
ERNT-ASQB68	A1S68B	Q68B	127(H)×420(W)×14(D)	839
ERNT-ASQB65	A1S65B	Q65B	127(H)×315(W)×14(D)	640
ERNT-ASQB55	A1S55B	Q55B	127(H)×260(W)×14(D)	537

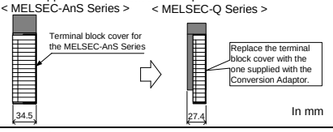
3. Mounting and Installation

3.1 Handling Instructions

(1) Before attempting to install the Unit or carry out the necessary wiring, make certain that the external power supply, used in the system, is shut off on all three phases. Failure to do so may result in electric shock or damage to the product.
(2) Do not touch live terminals. There is a danger of electric shock or malfunction.
(3) Do not modify the Conversion Adaptor or take it apart. Doing so will cause failure, malfunction, personal injury, or fire.
(4) Do not touch the energized part of the Conversion Adaptor directly. Contact will cause malfunction or failure in the system.
(5) Fasten the Conversion Adaptor , the Fittings and the Base Adaptor securely with retaining screws, and tighten the screws by applying torque within specified limits. Loose screws can lead to the dropping of the converter adaptor, fittings, or base adaptor, possibly causing breakage thereof. Excessive tightness of the screws can lead to breakage of the screws, converter adaptor, fittings, base adaptor, or MELSEC-Q Series Module, possibly causing the dropping, shorting, and malfunction thereof.
(6) Use care to prevent foreign materials including cuttings and wiring debris from entering the Conversion Adaptor or the MELSEC-Q Series module. These will be cause for fire, failure or malfunction.
(7) Do not drop the Conversion Adaptor, Fittings and the Base Adaptor, and avoid giving a strong impact to them. Otherwise, breakage will result.
(8) If the existing system is installed on a DIN rail, the Base Adaptor is not necessary. The MELSEC-Q Series Base Module you use can be mounted onto the DIN rail.

3.2 Instructions for Use

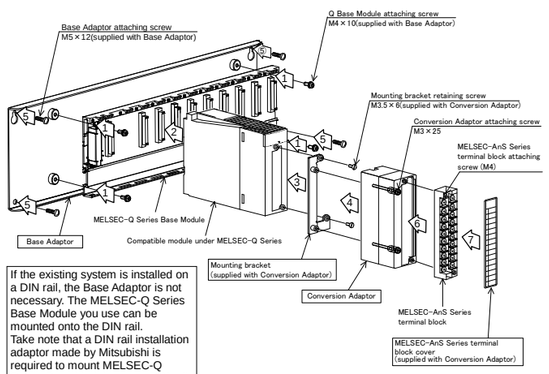
Item	Description
Width dimension of module	Because the module is reduced in width dimension (34.5mm→27.4mm) and thus in area available for wiring, check dimensional data before installing the module. < MELSEC-AnS Series > < MELSEC-Q Series >  In mm
Depth dimension of module	Because the module is increased in depth dimension, check dimensional data before installing the module.  Increased by 47.5mm In mm

Item	Description
Terminal block cover	The terminal block cover for MELSEC-AnS Series is bigger than the width of the MELSEC-Q Series Module. Therefore, it is necessary to replace it with the terminal block cover supplied with the converter adaptor. < MELSEC-AnS Series > < MELSEC-Q Series >  In mm

3.3 Installation Environment

For detail information, see the user's manual furnished with the MELSEC-Q Series CPU module you use.

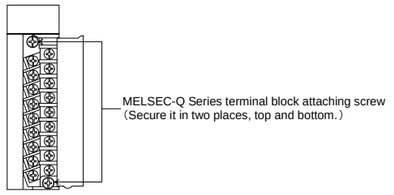
4. Part Names and Installation Procedure



If the existing system is installed on a DIN rail, the Base Adaptor is not necessary. The MELSEC-Q Series Base Module you use can be mounted onto the DIN rail.
Take note that a DIN rail installation adaptor made by Mitsubishi is required to mount MELSEC-Q Series Base Module onto a DIN rail.

4.1 Installation Procedure

[1] Secure the MELSEC-Q Series Base Module to the Base Adaptor with the supplied attaching screws (M4 x 10). (Secure it in four places.)
[2] Mount a compatible module under the MELSEC-Q Series onto the MELSEC-Q Series Base Module.
Also, remove the terminal block installed to the MELSEC-Q Series Module by undoing the terminal block attaching screws (one at the top and the other at the bottom).



[3] Secure the mounting bracket to a compatible module under the MELSEC-Q Series with retaining screws (M3.5 x 6). (Secure it in two places, top and bottom.)
[4] Mount the Conversion Adaptor onto the mounting bracket and secure it with the Conversion Adaptor attaching screws (M3 x 25). (Secure it in two places, top and bottom.)
[5] Secure the Base Adaptor to the panel with the supplied attaching screws (M5 x 12). (Secure it in four places.)
[6] Secure the MELSEC-AnS Series terminal block to the Conversion Adaptor with the supplied attaching screws (M4).
[7] Remove the terminal block cover from the MELSEC-AnS Series terminal block and fit the terminal block cover supplied with the Conversion Adaptor in place.

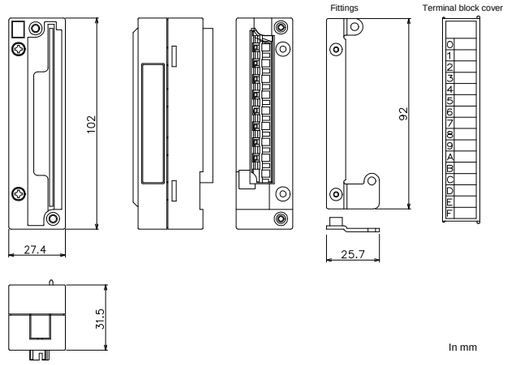
4.2 Tightening Torque

Tighten the module attaching screws by applying torque listed in the table blow. Application of improper tightening torque will cause dropping, short-circuit, failure, or malfunction.

Component attached with screw	Range of tightening torque
Base Adaptor attaching screw (M5)	2.75 – 3.63N·m
Q Series module attaching screw (M4)	1.39 – 1.89N·m
Mounting bracket securing screw (M3.5)	0.68 – 0.92N·m
Conversion Adaptor attaching screw (M3)	0.43 – 0.57N·m
MELSEC-AnS Series terminal block attaching screw (M4)	0.78 – 1.18N·m

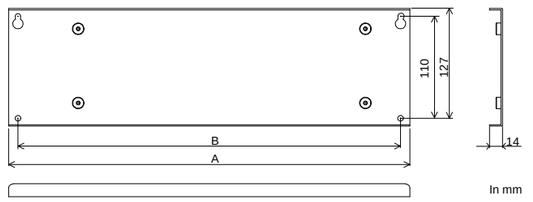
5. Dimensional Outline Drawing

5.1 Conversion Adaptor



In mm

5.2 Base Adaptor



In mm

Base Adaptor model name	A (mm)	B (mm)
ERNT-ASQB38	430	410
ERNT-ASQB35	325	305
ERNT-ASQB33	255	235
ERNT-ASQB00J	330	310
ERNT-ASQB68	420	400
ERNT-ASQB65	315	295
ERNT-ASQB55	260	240

Product Warranty Details

Please confirm the following product warranty details prior to product use.

Gratis Warranty Terms and Gratis Warranty Range

If any fault or defect (hereinafter referred to as "Failure") attributable to Mitsubishi Electric Engineering Company Limited (hereinafter referred to as "MEE") should occur within the gratis warranty period, MEE shall repair the product free of charge via the distributor from whom you made your purchase.

■ **Gratis Warranty Period**

The gratis warranty period of this product shall be one (1) year from the date of purchase or delivery to the designated place.
Note that after manufacture and shipment from MEE, the maximum distribution period shall be six (6) months, and the gratis warranty period after manufacturing shall be limited to eighteen (18) months.
In addition, the gratis warranty period for repaired products shall not exceed the gratis warranty period established prior to repair.

■ **Gratis Warranty Range**

The gratis warranty range shall be limited to normal use based on the usage conditions, methods and environment, etc., defined by the terms and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

Warranty Period after Discontinuation of Production

(1) MEE shall offer product repair services (fee applied) for seven (7) years after production of the product has been discontinued. Discontinuation of production shall be reported via distributors.
(2) Product supply (including spare parts) is not possible after production has been discontinued.

Exclusion of Opportunity Loss and Secondary Loss from Warranty Liability

Regardless of the gratis warranty period, MEE shall not be liable for compensation for damages arising from causes not attributable to MEE, opportunity losses or lost profits incurred by the user due to Failures of MEE products, damages or secondary damages arising from special circumstances, whether foreseen or unforeseen by MEE, compensation for accidents, compensation for damages to products other than MEE products, or compensation for other work carried out by the user.

Changes in Product Specifications

The specifications given in the catalogs, manuals and technical documents are subject to change without notice.

This document is a new publication, effective Apr 2011. Specifications are subject to change without notice. The standard price does not include consumption tax. Please note that consumption tax will be added at the time of purchase. This manual was printed on recycled paper.

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